

AMENDMENTS TO THE CLAIMS

1. (currently amended) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a two-stage matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the two-stage matching circuit comprises:

a ~~one-stage~~ high pass filter type matching unit, having a parallel inductor and a serial capacitor, formed only in a single stage; and

a ~~one-stage~~ low pass filter type matching unit formed only in a single stage, and

wherein the low pass filter type matching unit is serially connected with the ~~one-stage~~ high pass filter type matching unit.

2. (currently amended) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a two-stage matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing

an impedance matching between the pair of amplifying elements,

wherein the two-stage matching circuit arranged between the final-stage amplifying element and the amplifying element placed just before the final-stage amplifying element comprises:

a ~~one-stage~~ high pass filter type matching unit, having a parallel inductor and a serial capacitor, formed only in a single stage; and

a ~~one-stage~~ low pass filter type matching unit formed only in a single stage, and

wherein the low pass filter type matching unit is serially connected with each other the high pass filter type matching unit.

3. (currently amended) A multistage amplifier according to claim 1, wherein the ~~one-stage~~ high pass filter type matching unit is placed on an input side of the input signal, and the ~~one-stage~~ low pass filter type matching unit is placed on an output side of the amplified signal.

4. (currently amended) A multistage amplifier according to claim 1, wherein the ~~one-stage~~ low pass filter type matching unit is placed on an input side of the input signal, and the ~~one-stage~~ high pass filter type matching unit is placed on an output side of the

amplified signal.

5. (cancelled)

6. (previously presented) A multistage amplifier according to claim 1, wherein a bias supply short stub having a length equal to or shorter than $1/4$ of a wavelength of the input signal is used as the parallel inductor.

7. (currently amended) A multistage amplifier according to claim 1, wherein the ~~one-stage~~ low pass filter type matching unit comprises a parallel capacitor and a serial inductor.

8. (original) A multistage amplifier according to claim 7, wherein a serial line is used as the serial inductor.

9. (currently amended) A multistage amplifier according to claim 2, wherein the ~~one-stage~~ high pass filter type matching unit is placed on an input side of the input signal, and the ~~one-stage~~ low pass filter type matching unit is placed on an output side of the amplified signal.

10. (currently amended) A multistage amplifier according to claim 2, wherein the ~~one-stage~~ low pass filter type matching unit is placed on an input side of the input signal, and the ~~one-stage~~ high pass filter type matching unit is placed on an output side of the amplified signal.

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11. (previously presented) A multistage amplifier according to claim 2, wherein a bias supply short stub having a length equal to or shorter than $1/4$ of a wavelength of the input signal is used as the parallel inductor.

12. (currently amended) A multistage amplifier according to claim 2, wherein the ~~one-stage~~ high pass filter type matching unit is placed on an input side of the input signal, and the ~~one-stage~~ low pass filter type matching unit is placed on an output side of the amplified signal.

13. (currently amended) A multistage amplifier according to claim 2 ~~12~~, wherein a serial line is used as the serial inductor.

14. (new) The multistage amplifier according to claim 1,
wherein the low-pass filter type matching unit has a serial

inductor and a parallel capacitor, and

wherein the serial capacitor, the parallel capacitor, and the serial inductor are connected with one another with a direct electrical connection.

15. (new) The multistage amplifier according to claim 1, wherein
the high pass filter type matching unit in the single stage is made up of only the parallel inductor and the serial capacitor arranged in direct electrical connection in order from the input side of the high pass filter type matching unit; and

the low pass filter type matching unit in the single stage is made up of only a parallel capacitor and a serial inductor arranged in direct electrical connection in order from the input side of the low pass filter type matching unit.

16. (new) The multistage amplifier according to claim 15, wherein an impedance between the high pass filter type matching unit in the single stage and the low pass filter type matching unit in the single stage is set to a value between the impedance values of a pair of the amplifying elements adjacent to each other.

17. (new) A multistage amplifier according to claim 2,

wherein the low-pass filter type matching unit has a serial inductor and a parallel capacitor, and

wherein the serial inductor, the parallel inductor, and the serial capacitor are connected with one another with a direct electrical connection.

18. (new) A multistage amplifier according to claim 2, wherein

in the high pass filter type matching unit in the single stage, the parallel inductor and the serial capacitor are arranged in direct electrical connection in order from the input side of the high pass filter type matching unit;

the low pass filter type matching unit in the single stage is formed only by a parallel capacitor and a serial inductor; and

the serial inductor, the parallel inductor, and the serial capacitor are connected with one another with a direct electrical connection in order from the input side of the low pass filter type matching unit.

19. (new) A multistage amplifier according to claim 18, wherein

an impedance between the high pass filter type matching unit in the single stage and the low pass filter type matching unit in the single stage is set to a value between the impedance values of

a pair of the amplifying elements adjacent to each other.

20. (new) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the matching circuit comprises:

a one-stage high pass filter type matching unit having a parallel inductor and a serial capacitor; and

a one-stage low pass filter type matching unit having a parallel capacitor and a serial inductor,

wherein the one-stage low pass filter type matching unit is serially connected with the one-stage high pass filter type matching unit, and

wherein the serial capacitor, the parallel capacitor, and the serial inductor are connected with one another with a direct electrical connection.

21. (new) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input

signal stage by stage and outputting an amplified signal; and

a matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the matching circuit arranged between the final-stage amplifying element and the amplifying element placed just before the final-stage amplifying element comprises:

a one-stage high pass filter type matching unit having a parallel inductor and a serial capacitor; and

a one-stage low pass filter type matching unit having a parallel capacitor and a serial inductor,

wherein the one-stage low pass filter type matching unit is serially connected with the one-stage high pass filter type matching unit, and

wherein the serial inductor, the parallel inductor, and the serial capacitor are connected with one another with a direct electrical connection.

22. (New) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a two-stage matching circuit, directly connected between each

pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the two-stage matching circuit comprises:

a high pass filter type matching unit having only a parallel inductor and a serial capacitor, thereby forming a first stage; and

a low pass filter type matching unit having only a serial inductor and a parallel capacitor, thereby forming a second stage, and

wherein the low pass filter type matching unit is serially connected with the high pass filter type matching unit.

23. (new) The multistage amplifier according to claim 22, wherein the first stage and the second stage form the two-stage matching circuit.

24. (new) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a two-stage matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the two-stage matching circuit arranged between the

final-stage amplifying element and the amplifying element placed just before the final-stage amplifying element comprises:

a one-stage high pass filter type matching unit having only a parallel inductor and a serial capacitor, thereby forming a first stage; and

a low pass filter type matching unit having only a serial inductor and a parallel capacitor, thereby forming a second stage, and

wherein the low pass filter type matching unit is serially connected with the high pass filter type matching unit.

25. (new) The multistage amplifier according to claim 24, wherein the first stage and the second stage form the two-stage matching circuit.

26. (new) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the matching circuit consists of:

a one-stage high pass filter type matching unit having a parallel inductor and a serial capacitor; and

a one-stage low pass filter type matching unit having a serial inductor and a parallel inductor.

27. (new) The multistage amplifier according to claim 26, wherein the low pass filter type matching unit is serially connected with the high pass filter type matching unit.

28. (new) A multistage amplifier, comprising:

a plurality of amplifying elements for amplifying an input signal stage by stage and outputting an amplified signal; and

a matching circuit, directly connected between each pair of amplifying elements adjacent to each other, for performing an impedance matching between the pair of amplifying elements,

wherein the matching circuit arranged between the final-stage amplifying element and the amplifying element placed just before the final-stage amplifying element consists of:

a one-stage high pass filter type matching unit having a parallel inductor and a serial capacitor; and

a one-stage low pass filter type matching unit having a serial inductor and a parallel capacitor.

29. (new) The multistage amplifier according to claim 28, wherein the low pass filter type matching unit is serially connected with the high pass filter type matching unit.
